Dibyendu Nandi obtained his B.Sc. degree (1995) from St. Xavier’s College, Calcutta University and his M.S. and Ph.D. degrees (2002) in Physics from the Indian Institute of Science, Bangalore. He did postdoctoral work at Montana State University and subsequently held positions of Research Scientist and Assistant Professor there. Dibyendu returned to India in 2008 and joined IISER Kolkata. He continues to hold Visiting positions at Montana State University and Harvard-Smithsonian Center for Astrophysics.

**RESEARCH DESCRIPTION**

Dibyendu Nandi’s research is directed towards understanding the origin of the Sun's magnetic activity and its impact on our space environment, climate and modern-day technologies. The activity of the Sun is governed by its variable magnetism which is produced by a magnetohydrodynamic dynamo mechanism in the solar interior. Solar magnetic fields spawn flares and coronal mass ejections which are the largest explosions in the solar system. These solar storms impact satellite operations, telecommunications, air-traffic over polar routes, electric grids and oil pipelines in high-latitude countries. The long-term variation of solar magnetic fields also modulates the Sun's energy output and is therefore relevant for the climate system.

Dibyendu’s research has contributed to the understanding of how plasma flows inside the Sun influence magnetic field generation. In particular, using computational models, he has made important contributions to understanding the role of a large-scale flow of plasma known as meridional circulation in the spatio-temporal evolution of sunspots - strongly magnetized structures in the Sun which were first systematically observed by Galileo Galilei. Currently, Dibyendu is involved in understanding how the interplay of various physical processes in the Sun's interior governs the predictability of the solar cycle. A second component of Dibyendu's work focuses on the analysis and interpretation of satellite based solar observations. Specifically, his research has focused on non-potential magnetic structures, their characterization and connection with magnetic instabilities that result in solar storms. In recent years, he has also led international efforts in the development of the science of space climate. Dibyendu is involved with research focus teams at NASA, the International Astronomical Union and is a team member of India’s first solar space mission *Aditya*.

**SELECTED PUBLICATIONS**